



## MORBIDITY AND MORTALITY WEEKLY REPORT

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## Mercury Exposure from Interior Latex Paint – Michigan

In August 1989, a previously healthy 4-year-old boy in Michigan was diagnosed with acrodynia, a rare manifestation of childhood mercury poisoning. Symptoms and signs included leg cramps; rash; itching; excessive perspiration; rapid heartbeat; intermittent low-grade fevers; irritability; marked personality change; insomnia; headaches; hypertension; swelling; redness and peeling of the hands, feet, and nose; weakness of the pectoral and pelvic girdles; and nerve dysfunction in the lower extremities. A urine mercury level of 65  $\mu\text{g/L}$  was measured on a 24-hour urine collection. Treatment with intensive chelation therapy increased his urine mercury excretion 20-fold. Examination of his mother and two siblings found urine mercury levels greater than or approximately equal to his; his father had elevated, although lower, levels. Parents and siblings were asymptomatic, although electromyographic abnormalities were detected in one sibling.

The Michigan Department of Public Health (MDPH) identified inhalation of mercury-containing vapors from phenylmercuric acetate contained in latex paint as the probable route of mercury exposure for the family; 17 gallons of paint had been applied to the inside of the family's home during the first week of July. Samples of the paint contained 930–955 ppm mercury; the Environmental Protection Agency (EPA) limit for mercury as a preservative in interior paint is 300 ppm. During July, the house was air-conditioned, and the windows were not opened.

Following 4 months of hospitalization with repeated courses of chelation therapy and intensive rehabilitation, the patient's symptoms abated except for residual lower extremity weakness. Although electroneuromyographic abnormalities persist, he is able to walk and continues to improve.

In October, the Michigan Department of Agriculture prohibited further sales of the inappropriately formulated paint,\* and the MDPH advised persons not to apply the paint, to thoroughly ventilate freshly painted areas, and to consult a physician if unexplained health problems occurred. In November, the MDPH and CDC began an ongoing investigation in selected communities in southeastern Michigan to assess mercury levels in the air of homes in which this paint has been applied and in urine samples from persons living in these homes.

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\*The manufacturer sold this paint only in Michigan.

*Mercury – Continued*

**Editorial Note:** Phenylmercuric acetate is routinely added by some paint manufacturers to interior latex (water-based) paint as a fungicide and bactericide to prolong the paint's shelf-life. EPA permits interior latex paint to contain  $\leq 300$  ppm elemental mercury and exterior latex paint to contain  $\leq 2000$  ppm. However, neither the presence nor the concentration of mercury in the paint is required to be labeled on the paint can. Mercury may not lawfully be used in oil-based paint (1,2).

One case of acrodynia associated with the use of interior latex paint has been reported previously (3). Acrodynia may occur at urine mercury levels as low as 50  $\mu\text{g/L}$  (4). Because the Reinsch test, a urine screening for heavy metals, is not sufficiently sensitive to detect low mercury levels, urine should be tested for mercury content by cold vapor atomic absorption (5).

Little information is available about background urine mercury levels, especially in children. Data are largely limited to a 1961 World Health Organization multicountry survey of adults, which found that 95% of adults had urine mercury concentrations  $< 20 \mu\text{g/L}$ , and 89%,  $< 10 \mu\text{g/L}$  (6).

In adults, chronic exposure to mercury vapors can cause nerve-conduction delays, tremor, insomnia, loss of appetite, and irritability (4,7). In 1965, mercury vapor exposure from paint may have been the cause of a cluster of neuromyasthenia cases (with symptoms including headache, weakness, tremor, unsteady gait, and depression) in workers in an electronics factory (8). However, the long-term health effects in clinically asymptomatic persons with elevated urine mercury levels and the potential adverse health effects to children and fetuses have not been well established.

Because alternative paint preservatives are available, EPA is determining the distribution of mercury-containing paints and is reviewing the use of mercury as a paint preservative. To prevent mercury exposure from paint, proper ventilation should be assured both during and after painting. Cases of mercury poisoning considered to be associated with interior latex paint should be reported through state health departments to the Health Studies Branch, Division of Environmental Hazards and Health Effects, Center for Environmental Health and Injury Control, CDC; telephone (404) 488-4682.

*References*

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## Imported Dengue – United States, 1988

In 1988, 124 cases of imported dengue-like illness (i.e., dengue-like illness following apparent exposure outside the United States) were reported to CDC from 36 states and the District of Columbia (Table 1). Twenty-seven cases (from 17 states) were serologically or virologically confirmed as dengue, 72 were serologically negative for dengue, and the etiology of 25 remains undetermined because of lack of a convalescent serum sample.

**TABLE 1. Suspected and confirmed cases of dengue, by area – United States, 1988**

Area	Total	Confirmed	Travel history of persons with confirmed cases (serotype, if known)
Alabama	6	0	
California	1	1	Jamaica
Colorado	6	1	St. Lucia
Delaware	1	0	
District of Columbia	2	0	
Florida	1	0	
Georgia	3	0	
Hawaii	10	2	Philippines, Asia and Micronesia (DEN-2)*
Illinois	8	5	Kenya, Thailand, Asia, Virgin Islands, India
Indiana	1	0	
Iowa	1	0	
Kansas	2	1	Puerto Rico
Kentucky	1	0	
Louisiana	1	0	
Maine	1	0	
Maryland	1	0	
Massachusetts	9	3	Virgin Islands, Haiti, Taiwan
Michigan	5	2	Virgin Islands (DEN-4), <sup>†</sup> India
Minnesota	4	1	Thailand
Mississippi	2	0	
Missouri	5	0	
Montana	1	0	
New Hampshire	1	1	Central America (DEN-2)*
New Jersey	3	1	Unknown
New Mexico	2	0	
New York	20	1	Nigeria
North Dakota	1	0	
Ohio	4	2	India, Virgin Islands
Oregon	2	1	Asia (DEN-4)*
Pennsylvania	2	1	Caribbean
South Dakota	2	0	
Tennessee	2	0	
Texas	3	1	Unknown
Vermont	1	0	
Virginia	2	1	India (DEN-2) <sup>†</sup>
Washington	3	2	Philippines, Asia
Wisconsin	4	0	
<b>Total</b>	<b>124</b>	<b>27</b>	

\*Infecting dengue serotype (DEN) identified by plaque reduction neutralization test.

<sup>†</sup>Infecting dengue serotype identified by virus isolation.

*Dengue – Continued*

Travel histories of the 27 persons with confirmed dengue indicated that 12 infections had been acquired in Asia, nine in the Caribbean, two in Africa, one in Central America, and one in Oceania; for two, travel histories were unknown (Table 1). Dengue serotypes were identified in five cases, two by virus isolation and three serologically by plaque reduction neutralization test.

Sixteen (59%) of the confirmed cases were in males. Age was reported for 25 persons and ranged from 3 to 66 years (mean: 33 years). Most patients had symptoms consistent with classic dengue fever (e.g., fever, muscle and joint pain, headache, and rash), although several patients had marked thrombocytopenia and/or severe symptoms. Four of the 27 patients were hospitalized: a 3-year-old male Asian immigrant with thrombocytopenia, epistaxis, oliguria, hypotension, and hyponatremia who required intravenous-fluid therapy and platelet transfusions; a 40-year-old black male with thrombocytopenia, weakness, and hemorrhagic rash; a 13-year-old male Asian immigrant with thrombocytopenia, swollen legs, microhematuria, and lethargy; and a 37-year-old Asian male with thrombocytopenia,

(Continued on page 133)

**TABLE I. Summary – cases of specified notifiable diseases, United States**

Disease	8th Week Ending			Cumulative, 8th Week Ending		
	Feb. 24, 1990	Feb. 25, 1989	Median 1985-1989	Feb. 25, 1990	Feb. 24, 1989	Median 1985-1989
Acquired Immunodeficiency Syndrome (AIDS)	664	U*	234	6,835	4,454	2,828
Aseptic meningitis	70	99	83	644	650	650
Encephalitis: Primary (arthropod-borne & unspc)	9	8	12	88	88	119
Post-infectious	2	2	1	18	10	10
Gonorrhea: Civilian	11,304	12,361	16,045	100,644	102,041	126,061
Military	236	136	342	1,627	1,681	2,383
Hepatitis: Type A	450	664	513	3,875	4,973	3,540
Type B	354	350	411	2,598	2,844	3,421
Non A, Non B	38	50	55	277	360	418
Unspecified	49	87	68	260	373	522
Legionellosis	17	23	14	164	144	115
Leprosy	3	5	5	21	25	33
Malaria	19	23	16	140	155	99
Measles: Total†	271	177	61	1,638	644	265
Indigenous	256	177	56	1,391	609	248
Imported	15	-	5	247	35	33
Meningococcal infections	70	88	80	451	486	486
Mumps	84	97	102	731	823	655
Pertussis	40	32	41	398	312	272
Rubella (German measles)	12	6	5	53	36	35
Syphilis (Primary & Secondary): Civilian	1,198	849	675	6,764	5,844	5,091
Military	5	6	3	83	48	32
Toxic Shock syndrome	6	6	6	60	43	43
Tuberculosis	280	373	373	2,599	2,517	2,506
Tularemia	-	-	1	6	9	11
Typhoid Fever	9	5	6	53	55	39
Typhus fever, tick-borne (RMSF)	-	1	1	13	17	8
Rabies, animal	40	86	86	419	573	573

**TABLE II. Notifiable diseases of low frequency, United States**

	Cum. 1990		Cum. 1990
Anthrax	-	Leptospirosis	5
Botulism: Foodborne	1	Plague	-
Infant	5	Poliomyelitis, Paralytic, <sup>‡</sup>	-
Other	1	Psittacosis (Nebr. 1, N.C. 2)	28
Brucellosis (Calif. 1)	8	Rabies, human	-
Cholera	-	Tetanus (Calif. 1, La. 1, Fla. 1)	9
Congenital rubella syndrome	-	Trichinosis	6
Congenital syphilis, ages < 1 year	-		
Diphtheria	-		

\*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.

†Eleven of the 271 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

‡No cases of suspected poliomyelitis have been reported in 1990; none of 13 suspected cases in 1989 have been confirmed to date. Nine of 14 suspected cases in 1988 were confirmed and all were vaccine-associated.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending February 24, 1990 and February 25, 1989 (8th Week)

Reporting Area	AIDS	Aseptic Mening- itis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionel- losis	Leprosy
			Primary	Post-in- fectious			A	B	NA,NB	Unspeci- fied		
			Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990
UNITED STATES	6,835	644	88	18	100,644	102,041	3,875	2,598	277	260	164	21
NEW ENGLAND	299	41	5	-	3,018	2,919	65	154	6	14	7	-
Maine	16	1	-	-	36	42	-	10	1	1	1	-
N.H.	27	1	-	-	26	35	1	9	-	1	-	-
Vt.	-	3	-	-	11	11	1	6	2	-	1	-
Mass.	164	15	1	-	1,129	1,236	46	106	3	12	3	-
R.I.	7	17	-	-	152	261	8	12	-	-	2	-
Conn.	85	4	4	-	1,664	1,334	9	11	-	-	-	-
MID. ATLANTIC	2,733	120	2	-	11,480	17,805	617	400	46	23	45	7
Upstate N.Y.	297	44	2	-	2,155	2,401	128	104	6	1	19	1
N.Y. City	1,796	11	-	-	5,648	8,250	51	114	7	12	4	4
N.J.	427	-	-	-	2,042	2,187	63	54	14	-	7	2
Pa.	213	65	-	-	1,635	4,967	375	128	19	10	15	-
E.N. CENTRAL	458	110	11	4	20,486	17,369	225	356	16	17	45	-
Ohio	107	40	2	2	6,543	4,411	32	67	6	2	16	-
Ind.	39	21	1	2	1,989	877	38	121	2	4	9	-
Ill.	199	6	4	-	5,887	5,262	48	9	1	3	-	-
Mich.	86	41	4	-	5,251	5,195	88	108	7	8	13	-
Wis.	27	2	-	-	816	1,624	19	51	-	-	7	-
W.N. CENTRAL	206	29	6	-	5,778	4,407	201	105	10	4	7	-
Minn.	32	-	3	-	654	417	21	7	2	-	-	-
Iowa	8	2	1	-	456	369	49	14	1	1	1	-
Mo.	124	14	-	-	3,230	2,814	100	73	2	1	6	-
N. Dak.	-	-	-	-	21	21	2	-	-	1	-	-
S. Dak.	1	1	1	-	37	39	5	1	1	-	-	-
Nebr.	16	8	1	-	235	300	12	6	2	-	-	-
Kans.	25	4	-	-	1,145	447	12	4	2	1	-	-
S. ATLANTIC	1,076	133	31	4	28,932	27,243	426	512	44	41	23	-
Del.	22	3	1	-	379	406	23	8	1	1	2	-
Md.	191	33	4	-	3,384	2,048	219	92	7	2	8	-
D.C.	51	1	-	-	484	1,974	6	5	2	-	-	-
Va.	220	34	12	-	2,714	2,435	17	33	5	31	2	-
W. Va.	15	1	1	-	192	233	4	19	1	-	-	-
N.C.	56	14	8	1	5,024	4,143	70	159	21	-	5	-
S.C.	54	2	-	-	2,697	2,671	10	96	3	3	3	-
Ga.	210	6	3	-	6,954	5,286	34	47	1	2	3	-
Fla.	257	39	2	3	7,104	8,047	43	53	3	2	-	-
E.S. CENTRAL	129	46	6	-	8,857	8,412	57	223	20	2	15	-
Ky.	23	13	-	-	854	781	16	61	8	2	3	-
Tenn.	28	6	4	-	2,514	2,840	17	119	8	-	6	-
Ala.	22	21	2	-	3,625	2,431	24	43	4	-	6	-
Miss.	56	6	-	-	1,864	2,360	-	-	-	-	-	-
W.S. CENTRAL	537	20	1	1	9,117	10,784	272	135	15	23	9	6
Ark.	32	1	-	-	1,499	1,029	78	14	1	1	1	-
La.	123	3	1	-	1,906	1,922	14	32	-	-	2	-
Okla.	42	4	-	1	845	1,066	78	26	3	2	6	-
Tex.	340	12	-	-	4,867	6,767	102	63	11	20	-	6
MOUNTAIN	193	28	3	-	1,889	2,042	638	191	19	29	10	-
Mont.	3	1	-	-	20	34	18	16	1	1	-	-
Idaho	6	-	-	-	14	35	6	14	4	-	-	-
Wyo.	-	1	1	-	19	24	13	4	-	-	-	-
Colo.	63	7	-	-	411	337	37	27	4	15	-	-
N. Mex.	12	3	-	-	161	208	58	21	-	-	-	-
Ariz.	67	8	2	-	826	768	425	51	9	6	6	-
Utah	22	3	-	-	64	85	22	8	-	2	-	-
Nev.	20	5	-	-	374	551	59	50	1	5	4	-
PACIFIC	1,204	117	23	9	11,087	11,060	1,374	522	101	107	3	8
Wash.	81	-	1	1	951	1,001	223	69	19	4	-	1
Oreg.	16	-	-	-	419	435	153	59	7	5	-	-
Calif.	1,074	106	21	7	9,482	9,415	932	374	73	97	3	4
Alaska	7	2	-	-	190	161	33	7	2	-	-	-
Hawaii	26	9	1	1	45	48	33	13	-	1	-	3
Guam	1	-	-	-	22	27	2	1	-	3	-	-
P.R.	312	19	4	-	-	166	7	9	-	-	-	-
V.I.	3	-	-	-	59	85	-	1	-	-	-	-
Amer. Samoa	-	-	-	-	-	8	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	9	18	1	1	-	-	-	-

N: Not notifiable

U: Unavailable

C.N.M.I.: Commonwealth of the Northern Mariana Islands

**TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending February 24, 1990 and February 25, 1989 (8th Week)**

Reporting Area	Malaria		Measles (Rubeola)				Meningococcal Infections	Mumps		Pertussis			Rubella		
	Cum. 1990	1990	Indigenous		Imported*	Total		Cum. 1990	1990	Cum. 1990	1990	Cum. 1990	Cum. 1989	1990	Cum. 1990
			1990	Cum. 1990	1990		Cum. 1990								
UNITED STATES	140	256	1,391	15	247	644	451	84	731	40	398	312	12	53	36
NEW ENGLAND	21	8	13	2	8	8	34	3	8	7	65	12	-	1	-
Maine	-	-	-	-	-	-	4	-	-	-	1	4	-	-	-
N.H.	2	-	-	-	6	-	-	2	3	-	6	5	-	-	-
Vt.	3	-	-	-	-	1	4	-	1	-	2	1	-	-	-
Mass.	10	-	8	-	-	3	19	1	3	6	53	-	-	-	-
R.I.	2	8	8	2†	2	3	-	-	1	-	-	2	-	1	-
Conn.	4	-	5	-	-	1	7	-	-	-	3	-	-	-	-
MID. ATLANTIC	24	9	122	-	67	52	68	-	43	18	113	29	1	1	2
Upstate N.Y.	3	1	86	-	57	21	21	-	17	16	100	9	1	1	1
N.Y. City	10	3	11	-	4	15	5	-	-	-	-	-	-	-	1
N.J.	4	-	-	-	-	28	16	-	7	-	2	17	-	-	-
Pa.	7	5	25	-	6	9	26	-	19	2	11	3	-	-	-
E.N. CENTRAL	8	93	675	-	116	46	56	5	58	4	75	35	-	5	2
Ohio	2	51	96	-	-	45	19	-	12	-	19	1	-	-	-
Ind.	-	14	48	-	-	-	7	-	4	1	28	1	-	-	-
Ill.	2	-	248	-	-	-	14	-	9	-	4	12	-	5	1
Mich.	3	28	65	-	116	-	11	5	25	3	13	4	-	-	-
Wis.	1	-	218	-	-	1	5	-	8	-	11	17	-	-	1
W.N. CENTRAL	1	28	48	1	1	198	21	-	33	-	4	9	-	-	1
Minn.	-	27	27	1†	1	-	3	-	-	-	-	-	-	-	-
Iowa	-	1	21	-	-	-	1	-	4	-	1	6	-	-	-
Mo.	1	-	-	-	-	195	9	-	14	-	1	2	-	-	1
N. Dak.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S. Dak.	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
Nebr.	-	-	-	-	-	-	3	-	1	-	1	-	-	-	-
Kans.	-	-	-	-	-	3	3	-	14	-	1	1	-	-	-
S. ATLANTIC	32	57	102	1	29	85	93	38	270	3	44	19	-	-	-
Del.	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-
Md.	7	1	9	-	11	4	10	18	149	3	18	1	-	-	-
D.C.	4	-	-	-	1	2	1	-	4	-	1	-	-	-	-
Va.	7	-	3	-	2	-	13	-	9	-	4	2	-	-	-
W. Va.	1	-	-	-	-	-	2	11	22	-	5	1	-	-	-
N.C.	3	-	3	-	-	79	16	3	25	-	5	10	-	-	-
S.C.	-	-	-	-	-	-	7	-	9	-	-	-	-	-	-
Ga.	4	-	1	-	-	-	20	-	20	-	7	1	-	-	-
Fla.	6	56	85	1‡	15	-	24	6	32	-	3	4	-	-	-
E.S. CENTRAL	3	2	17	-	-	2	24	2	26	-	14	17	-	-	-
Ky.	-	-	-	-	-	1	9	-	-	-	-	-	-	-	-
Tenn.	2	2	12	-	-	-	9	1	8	-	3	11	-	-	-
Ala.	1	-	-	-	-	1	6	-	3	-	11	4	-	-	-
Miss.	-	-	5	-	-	-	-	N	N	-	2	-	-	-	-
W.S. CENTRAL	1	46	83	2	7	80	36	22	170	-	6	3	-	-	5
Ark.	-	-	-	-	-	-	3	9	35	-	-	1	-	-	-
La.	-	-	-	-	-	1	8	1	32	-	1	-	-	-	-
Okla.	1	-	3	-	-	-	7	-	61	-	5	2	-	-	-
Tex.	-	46	80	2†	7	79	18	12	42	-	-	-	-	-	5
MOUNTAIN	4	13	32	9	11	16	7	5	42	3	41	142	-	-	1
Mont.	-	-	-	-	-	13	3	-	-	-	-	-	-	-	-
Idaho	2	-	-	-	-	1	-	4	20	-	2	7	-	-	-
Wyo.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
Colo.	-	1	2	1‡	2	1	2	-	4	3	31	10	-	-	-
N. Mex.	-	-	1	-	-	-	-	N	N	-	-	1	-	-	-
Ariz.	2	4	21	6†	7	1	1	1	13	-	6	120	-	-	-
Utah	-	-	-	-	-	-	-	-	2	-	-	3	-	-	-
Nev.	-	8	8	2‡	2	-	1	-	1	-	2	1	-	-	1
PACIFIC	46	-	299	-	8	157	112	9	81	5	36	46	11	46	25
Wash.	2	-	-	-	6	-	12	2	10	4	8	4	-	-	-
Oreg.	2	-	-	-	-	-	10	N	N	-	2	-	-	-	-
Calif.	41	-	291	-	2	153	87	7	70	1	23	40	11	42	25
Alaska	-	-	8	-	-	-	3	-	-	-	-	-	-	-	-
Hawaii	1	-	-	-	-	4	-	-	1	-	3	2	-	4	-
Guam	1	U	-	U	-	-	-	U	-	U	-	1	U	-	-
P.R.	-	-	25	-	-	81	3	-	2	-	-	-	-	-	1
V.I.	-	U	-	U	-	-	-	U	1	U	-	-	U	-	-
Amer. Samoa	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
C.N.M.I.	-	U	-	U	-	-	-	U	1	U	-	-	U	-	-

\*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International ‡Out-of-state

**TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending February 24, 1990 and February 25, 1989 (8th Week)**

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic- shock Syndrome	Tuberculosis		Tula- remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990
UNITED STATES	6,764	5,844	60	2,599	2,517	6	53	13	419
NEW ENGLAND	281	235	3	46	56	-	-	-	-
Maine	1	-	-	-	1	-	-	-	-
N.H.	23	-	-	1	4	-	-	-	-
Vt.	-	-	-	2	1	-	-	-	-
Mass.	97	88	2	18	24	-	-	-	-
R.I.	1	6	-	12	9	-	-	-	-
Conn.	159	141	1	13	17	-	-	-	-
MID. ATLANTIC	1,212	1,123	8	645	586	1	15	2	121
Upstate N.Y.	57	89	4	17	50	-	6	-	3
N.Y. City	867	421	1	460	389	-	1	-	-
N.J.	241	208	-	82	69	1	7	2	36
Pa.	47	405	3	86	78	-	1	-	82
E.N. CENTRAL	357	242	16	301	286	-	8	1	5
Ohio	62	12	6	30	61	-	3	-	-
Ind.	4	5	2	17	16	-	-	-	-
Ill.	154	112	-	144	122	-	2	-	2
Mich.	99	104	8	96	77	-	3	1	-
Wis.	38	9	-	14	10	-	-	-	3
W.N. CENTRAL	51	50	6	73	65	3	-	2	47
Minn.	14	4	-	14	15	-	-	-	29
Iowa	5	10	-	6	9	-	-	-	-
Mo.	26	26	3	31	18	3	-	2	-
N. Dak.	1	-	-	3	4	-	-	-	5
S. Dak.	-	-	-	4	6	-	-	-	8
Nebr.	2	10	2	7	2	-	-	-	-
Kans.	3	-	1	8	11	-	-	-	5
S. ATLANTIC	2,496	2,105	-	404	510	1	5	3	129
Del.	33	25	-	5	4	-	-	-	2
Md.	160	112	-	44	44	-	3	-	47
D.C.	197	127	-	10	29	-	-	-	-
Va.	97	89	-	24	54	-	-	-	24
W. Va.	2	3	-	6	14	-	-	-	2
N.C.	267	126	-	62	49	1	-	2	2
S.C.	153	106	-	76	59	-	-	1	15
Ga.	619	475	-	52	71	-	1	-	31
Fla.	968	1,042	-	125	186	-	1	-	6
E.S. CENTRAL	614	404	4	160	218	-	-	1	18
Ky.	12	8	-	65	53	-	-	-	7
Tenn.	216	151	2	28	56	-	-	1	-
Ala.	223	154	2	59	81	-	-	-	11
Miss.	163	91	-	8	28	-	-	-	-
W.S. CENTRAL	961	775	3	315	224	-	1	3	52
Ark.	59	58	-	36	28	-	-	-	4
La.	318	149	-	43	32	-	-	-	-
Okla.	29	11	3	22	10	-	-	3	11
Tex.	555	557	-	214	154	-	1	-	37
MOUNTAIN	135	149	5	48	82	1	2	-	12
Mont.	-	-	-	-	-	-	-	-	5
Idaho	1	-	1	-	3	-	-	-	-
Wyo.	-	-	1	-	-	-	-	-	5
Colo.	7	6	-	-	-	-	-	-	-
N. Mex.	11	4	2	14	13	1	-	-	1
Ariz.	87	36	1	20	42	-	2	-	-
Utah	1	5	-	-	12	-	-	-	-
Nev.	28	98	-	14	12	-	-	-	1
PACIFIC	657	761	15	607	490	-	22	1	35
Wash.	4	48	1	40	31	-	-	-	-
Oreg.	17	38	-	17	16	-	-	-	-
Calif.	630	671	13	524	418	-	21	1	25
Alaska	2	-	-	4	5	-	-	-	10
Hawaii	4	4	1	22	20	-	1	-	-
Guam	-	3	-	6	9	-	-	-	-
P.R.	-	64	-	1	37	-	-	-	12
V.I.	-	1	-	1	1	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-
C.N.M.I.	-	1	-	3	-	-	2	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,\* week ending  
February 24, 1990 (8th Week)

Reporting Area	All Causes, By Age (Years)						P&I**	Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1			Total	All Ages	≥65	45-64	25-44	1-24	
NEW ENGLAND	662	473	120	38	17	14	63	S. ATLANTIC	1,327	828	274	151	36	35	103
Boston, Mass.	169	104	32	14	14	5	20	Atlanta, Ga.	208	116	43	31	8	10	26
Bridgport, Conn.	45	31	13	1	-	-	3	Baltimore, Md.	316	197	67	37	5	10	12
Cambridge, Mass.	29	21	5	1	1	1	5	Charlotte, N.C.	74	46	15	7	2	4	12
Fall River, Mass.	31	28	3	-	-	-	-	Jacksonville, Fla.	124	89	20	10	3	2	12
Hartford, Conn.	62	43	11	6	1	1	9	Miami, Fla.	89	45	25	16	1	2	4
Lowell, Mass.	29	21	6	2	-	-	1	Norfolk, Va.	55	34	11	4	5	1	6
Lynn, Mass.	20	13	6	-	-	1	-	Richmond, Va.	79	55	14	7	2	1	9
New Bedford, Mass.	29	24	4	1	-	-	1	Savannah, Ga.	56	35	12	6	3	-	9
New Haven, Conn.	29	21	4	2	-	2	2	St. Petersburg, Fla.	72	56	9	6	1	-	3
Providence, R.I.	34	25	5	3	1	-	5	Tampa, Fla.	75	48	17	4	2	4	5
Somerville, Mass.	7	7	-	-	-	-	-	Washington, D.C.	154	86	39	23	4	1	5
Springfield, Mass.	58	45	7	3	-	3	5	Wilmington, Del.	25	21	2	-	-	-	-
Waterbury, Conn.	43	36	6	1	-	-	3	E.S. CENTRAL	711	503	129	48	13	18	66
Worcester, Mass.	77	54	18	4	-	1	9	Birmingham, Ala.	125	81	28	8	2	6	3
MID. ATLANTIC	2,771	1,804	533	301	76	57	217	Chattanooga, Tenn.	66	52	6	4	1	3	7
Albany, N.Y.	58	43	7	4	2	2	4	Knoxville, Tenn.	94	59	22	9	3	1	14
Allentown, Pa.	17	13	3	1	-	-	-	Louisville, Ky.	70	49	13	4	1	3	7
Buffalo, N.Y.	162	88	40	28	3	3	10	Memphis, Tenn.	130	98	21	9	1	1	15
Camden, N.J.	45	29	8	1	4	3	-	Mobile, Ala.	41	26	5	5	3	2	1
Elizabeth, N.J.	36	28	4	1	2	1	9	Montgomery, Ala.‡	56	47	6	2	1	-	3
Erie, Pa.†	53	39	10	1	3	-	5	Nashville, Tenn.	129	91	28	7	1	2	16
Jersey City, N.J.	66	36	16	11	-	3	5	W.S. CENTRAL	1,925	1,246	377	186	56	60	108
N.Y. City, N.Y.	1,523	977	284	189	44	29	102	Austin, Tex.	60	41	8	8	2	1	3
Newark, N.J.	104	59	23	13	6	3	12	Baton Rouge, La.	38	34	3	1	-	-	4
Paterson, N.J.	44	28	10	6	-	-	1	Corpus Christi, Tex.§	70	51	14	4	-	1	8
Philadelphia, Pa.	196	134	37	17	6	2	17	Dallas, Tex.	255	157	47	31	10	10	10
Pittsburgh, Pa.†	76	44	27	2	1	2	4	El Paso, Tex.	84	60	13	5	4	2	5
Reading, Pa.	39	30	4	5	-	-	5	Fort Worth, Tex	97	57	18	7	2	13	7
Rochester, N.Y.	152	111	23	9	1	8	25	Houston, Tex.§	734	436	169	89	24	16	18
Schenectady, N.Y.	23	18	4	-	1	-	3	Little Rock, Ark.	73	48	20	2	1	2	4
Scranton, Pa.†	32	24	6	2	-	-	2	New Orleans, La.§	161	104	31	15	7	4	-
Syracuse, N.Y.	62	44	10	6	1	1	5	San Antonio, Tex.	176	119	32	16	3	6	18
Trenton, N.J.	34	22	9	2	1	-	3	Shreveport, La.	68	47	17	2	1	1	13
Utica, N.Y.	21	16	3	1	1	-	1	Tulsa, Okla.	109	92	5	6	2	4	18
Yonkers, N.Y.	28	21	5	2	-	-	4	MOUNTAIN	751	513	122	63	26	27	49
E.N. CENTRAL	2,412	1,590	513	165	64	80	157	Albuquerque, N. Mex.	80	45	10	12	10	3	5
Akron, Ohio	53	41	9	1	1	1	3	Colo. Springs, Colo.	41	28	6	5	1	1	5
Canton, Ohio	36	27	8	-	-	-	7	Denver, Colo.	136	97	17	14	3	5	3
Chicago, Ill.§	564	362	125	45	10	22	16	Las Vegas, Nev.	93	56	22	11	3	1	14
Cincinnati, Ohio	152	94	33	16	5	4	18	Ogden, Utah	18	13	3	2	-	-	4
Cleveland, Ohio	176	110	46	8	4	8	2	Phoenix, Ariz.	197	140	28	13	5	11	8
Columbus, Ohio	178	110	47	8	7	6	10	Pueblo, Colo.	18	12	6	-	-	-	-
Dayton, Ohio	120	83	21	10	4	2	8	Salt Lake City, Utah	45	27	10	3	1	4	2
Detroit, Mich.	229	123	58	23	12	13	5	Tucson, Ariz.	123	95	20	3	3	2	8
Evansville, Ind.	42	29	6	3	1	3	5	PACIFIC	1,968	1,364	306	189	47	54	178
Fort Wayne, Ind.	79	55	14	7	1	2	7	Berkeley, Calif.	10	6	3	1	-	-	2
Gary, Ind.	21	13	5	3	-	-	3	Fresno, Calif.	97	66	17	6	2	6	7
Grand Rapids, Mich.	96	76	10	2	5	3	19	Glendale, Calif.	20	19	1	-	-	-	5
Indianapolis, Ind.	147	99	34	8	3	3	5	Honolulu, Hawaii	75	46	16	10	3	-	13
Madison, Wis.	33	24	5	3	-	1	1	Long Beach, Calif.	89	53	18	11	1	6	15
Milwaukee, Wis.	161	108	35	8	3	7	7	Los Angeles Calif.	541	371	91	56	12	4	40
Peoria, Ill.	68	49	15	2	1	1	9	Oakland, Calif.	90	62	11	9	2	5	7
Rockford, Ill.	44	28	9	2	4	1	3	Pasadena, Calif.	29	20	3	2	-	4	6
South Bend, Ind.	58	42	11	4	-	1	5	Portland, Ore.	143	112	17	7	2	5	13
Toledo, Ohio	103	78	14	9	1	1	11	Sacramento, Calif.	157	114	25	11	1	6	21
Youngstown, Ohio	52	39	8	3	2	-	13	San Diego, Calif.	136	94	20	15	7	-	19
W.N. CENTRAL	802	573	132	51	20	26	47	San Francisco, Calif.	133	82	19	25	4	3	2
Des Moines, Iowa	75	57	10	4	1	3	3	San Jose, Calif.	195	133	27	22	8	5	16
Duluth, Minn.	18	12	5	1	-	-	-	Seattle, Wash.	145	104	20	11	4	6	5
Kansas City, Kans.	35	25	6	2	1	1	2	Spokane, Wash.	55	44	8	2	-	1	7
Kansas City, Mo.	127	79	30	11	4	3	12	Tacoma, Wash.	53	38	10	1	1	3	-
Lincoln, Nebr.	52	39	9	-	3	1	7	TOTAL	13,329 <sup>††</sup>	8,894	2,506	1,192	355	371	988
Minneapolis, Minn.	125	97	14	10	3	1	15								
Omaha, Nebr.	85	58	18	7	-	2	2								
St. Louis, Mo.	159	111	23	11	3	11	-								
St. Paul, Minn.	76	56	9	4	4	3	4								
Wichita, Kans.	50	39	8	1	1	1	2								

\*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

\*\*Pneumonia and influenza.

†Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

‡Data not available. Figures are estimates based on average of past available 4 weeks.

*Dengue – Continued*

palatal petechiae, and severe myalgias. Gastrointestinal bleeding was reported in two additional patients.

*Reported by: State and territorial health departments. Dengue Br, Div of Vector-Borne Infectious Diseases, Center for Infectious Diseases, CDC.*

**Editorial Note:** Illness associated with imported dengue cases in 1988 appeared to be more severe than illness reported in 1987, when only one of 18 confirmed cases was reported to have had hemorrhagic manifestations (1). Two of the four persons hospitalized in 1988 were immigrant Asian children, who are part of a high-risk group for dengue hemorrhagic fever. U.S. citizens traveling abroad rarely acquire this severe form of dengue fever even when traveling to high-risk areas (2).

Because *Aedes aegypti* (the principal mosquito vector of dengue) and *Ae. albopictus* (another potential mosquito vector of dengue) are present in the continental United States (3), the potential exists for indigenous transmission of dengue in most southeastern and central states. In 1988, Texas was the only state with *Ae. aegypti* to report a confirmed imported case of dengue; however, imported cases were reported from five states (Hawaii, Illinois, Ohio, Texas, and Virginia) where *Ae. albopictus* is found. Public health officials and clinicians should consider the diagnosis of dengue in any patient with an acute febrile illness and a history of recent travel to tropical areas. Suspected dengue should be reported and serum samples sent for confirmation to CDC through state and territorial health departments.

*References*

1. CDC. Imported dengue—United States, 1987. MMWR 1989;38:463–5.
2. Halstead SB. Dengue haemorrhagic fever: a public health problem and field for research. Bull WHO 1980;58:1–21.
3. CDC. Update: *Aedes albopictus* infestation—United States, Mexico. MMWR 1989;38:440, 445–6.

## State Tobacco-Use Prevention and Control Plans

In October 1989, the Association of State and Territorial Health Officials (ASTHO) surveyed health agencies in all 50 states and the District of Columbia to assess activities related to control of tobacco use. The survey focused on the extent to which planning efforts met criteria listed in *Guide to Public Health Practice: State Health Agency Tobacco Prevention and Control Plans* (1).<sup>\*</sup> Respondents submitted copies of existing plans for tobacco-use prevention and control. This report summarizes the analysis of specific plans to control tobacco use (free-standing plans) or plans that form a discrete section on tobacco-use-control in a more general health-planning document.

Plans were evaluated in terms of the following components: 1) involvement of a tobacco-and-health coalition or advisory group comprising representatives from both the private and public sectors; 2) inclusion of an analysis of state-specific tobacco-use behavior; 3) presentation of detailed objectives and specific strategies for reducing tobacco use in the state; 4) presence of an outline of a specific workplan identifying individuals and organizations responsible for implementing the plan; 5) description of outcome evaluation measures, including tobacco-use surveillance systems; 6) description of process evaluation measures of program/plan activities (e.g., integrity of

<sup>\*</sup>Copies are available from the National Cancer Institute, 9000 Rockville Pike, Building 31, Room 10A24, Bethesda, MD 20892; or the Technical Information Center, Office on Smoking and Health, Center for Chronic Disease Prevention and Health Promotion, CDC, 5600 Fishers Lane, Park Building, Room 1-16, Rockville, MD 20857.

*Tobacco – Continued*

programs and models); and 7) presence of state funding for reducing tobacco use (Table 1).

As of December 31, 1989, 12 states (Colorado, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, North Dakota, Oregon, Pennsylvania, Utah, Vermont, and Virginia) had published plans for tobacco-use prevention and control (Table 1). Minnesota published the first plan in 1984, and five states (Colorado, Michigan, New Jersey, Vermont, and Virginia) published their plans during 1989. Alabama, Connecticut, Idaho, Illinois, Indiana, and Rhode Island reported that smoking prevention was included in their general plans for health service. Colorado, North Dakota, and Utah have plans as part of the Rocky Mountain Tobacco-Free Challenge, an eight-state effort to reduce the prevalences of tobacco use and chronic diseases associated with tobacco use (2).

All the state plans addressed the seven critical components of planning as well as high-risk populations, health care, smoking cessation issues, worksite policies, public education activities, and school and adolescent program strategies. Nine of the 12 states with plans funded activities for tobacco-use prevention and cessation. Workplans to implement listed objectives and process measures were the most frequently omitted critical elements.

Of the nine plans that included state-specific assessment of tobacco-use behavior, six assessed adolescent smoking prevalence, and eight assessed adult smoking prevalence (Table 2). Seven states included an economic analysis, including tax data or other economic issues. Four states included state legislation and policies in their plans, and three included using state/local resources for tobacco-use prevention and control.

*Reported by: KM Marconi, PhD, JW Colborn, MS, National Cancer Institute, National Institutes of Health. Program Svcs Activity, Office on Smoking and Health, Center for Chronic Disease Prevention and Health Promotion, CDC.*

**Editorial Note:** Elements essential to the control of tobacco use include comprehensive planning, evaluation, funding, and community support. The ASTHO survey provides baseline information for measuring progress in these areas during the 1990s. This information will be particularly important in 1993, when the National Cancer Institute and the American Cancer Society will sponsor the American Stop Smoking Intervention Study (ASSIST) (3). This multistate effort will provide funding, coordination, training, and evaluation for tobacco-use prevention and control in 20 geographic areas (which could include entire states or large metropolitan areas) through 1998.

One indication of the growth in state-based tobacco-use-control activities is the number of states that reported developing plans to address this problem. Ten additional states (Arkansas, Delaware, Maine, Missouri, New Mexico, Ohio, Rhode Island, Texas, West Virginia, and Wisconsin) are expecting to publish plans.

Tobacco use is a public health problem that may be approached at the state level through community involvement. A conference on the Public Health Practice of Tobacco Prevention and Control on March 8 and 9, 1990, in Houston will address these issues. This conference will provide state-based tobacco-control specialists a forum for information exchange and technical assistance on a wide range of tobacco-control activities. These activities will direct the national efforts toward a smoke-free society by the year 2000. Further information on the conference is available from ASTHO at (703) 556-9222 or CDC at (301) 443-1575.

**TABLE 1. Analysis of 12 state tobacco plans – Association of State and Territorial Health Officials and CDC survey, 1989**

State	Free-standing tobacco-control plan	Year published	Involvement of tobacco coalition	Presence of analytical assessment	Specific objectives included	Specific workplan included	Outcome measure described	Process measure described	State funding for tobacco control
Colorado	Y*	1989	Y	Y	Y	N	Y	N	Y
Massachusetts	Y	1988	Y	Y	Y	N	Y	N	N
Michigan	Y	1989	Y	Y	Y	Y	Y	Y	Y
Minnesota	Y	1984	Y	Y	Y	Y	Y	Y	Y
Nebraska	Y	1985	Y	N	Y	N	Y	N	Y
New Jersey	N	1989	Y	Y	Y	N	N	Y	Y
North Dakota	Y	1986	Y	Y	Y	Y	Y	N	Y
Oregon	N	1988	Y	Y	Y	Y	Y	Y	N
Pennsylvania	Y	1986	Y	Y	Y	N	N	Y	Y
Utah	Y	1988	Y	Y	Y	Y	Y	Y	Y
Vermont	N	1989	Y	N	Y	N	N	Y	Y
Virginia	N	1989	Y	N	Y	N	Y	N	N
<b>Total</b>	<b>8Y,4N</b>		<b>12Y</b>	<b>9Y,3N</b>	<b>12Y</b>	<b>5Y,7N</b>	<b>9Y,3N</b>	<b>7Y,5N</b>	<b>9Y,3N</b>

\*Y = yes; N = no.

## Tobacco — Continued

## References

1. Association of State and Territorial Health Officials/National Cancer Institute. Guide to public health practice: state health agency tobacco prevention and control plans. McLean, Virginia: Association of State and Territorial Health Officials, 1989.
2. CDC. State-based chronic disease control: the Rocky Mountain Tobacco-Free Challenge. MMWR 1989;38:749-52.
3. CDC. Trends in lung cancer incidence—United States, 1973-1986. MMWR 1989;38:505-6, 511-3.

**TABLE 2. Analysis of nine state-specific tobacco-use behavior assessment plans — Association of State and Territorial Health Officials and CDC survey, 1989**

State	Disease impact estimate*	Adult smoking behavior surveillance	Adolescent smoking behavior surveillance	Economic analysis <sup>†</sup>	Legislation/policy analysis	State/local resource assessment
Colorado	Y <sup>‡</sup>	Y	Y	Y	Y	Y
Massachusetts	Y	Y	Y	Y	Y	Y
Michigan	N	Y	N	N	N	N
Minnesota	Y	Y	Y	Y	Y	Y
New Jersey	Y	N	N	Y	N	N
North Dakota	Y	Y	Y	Y	Y	N
Oregon	Y	Y	N	Y	N	N
Pennsylvania	Y	Y	Y	N	N	N
Utah	Y	Y	Y	Y	N	N
<b>Total</b>	<b>8Y,1N</b>	<b>8Y,1N</b>	<b>6Y,3N</b>	<b>7Y,2N</b>	<b>4Y,5N</b>	<b>3Y,6N</b>

\*Smoking-attributable mortality, morbidity, and economic costs.

<sup>†</sup>Including state/local tax data and economic incentives, such as differential insurance rates for smokers and nonsmokers.

<sup>‡</sup>Y = yes; N = no.

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